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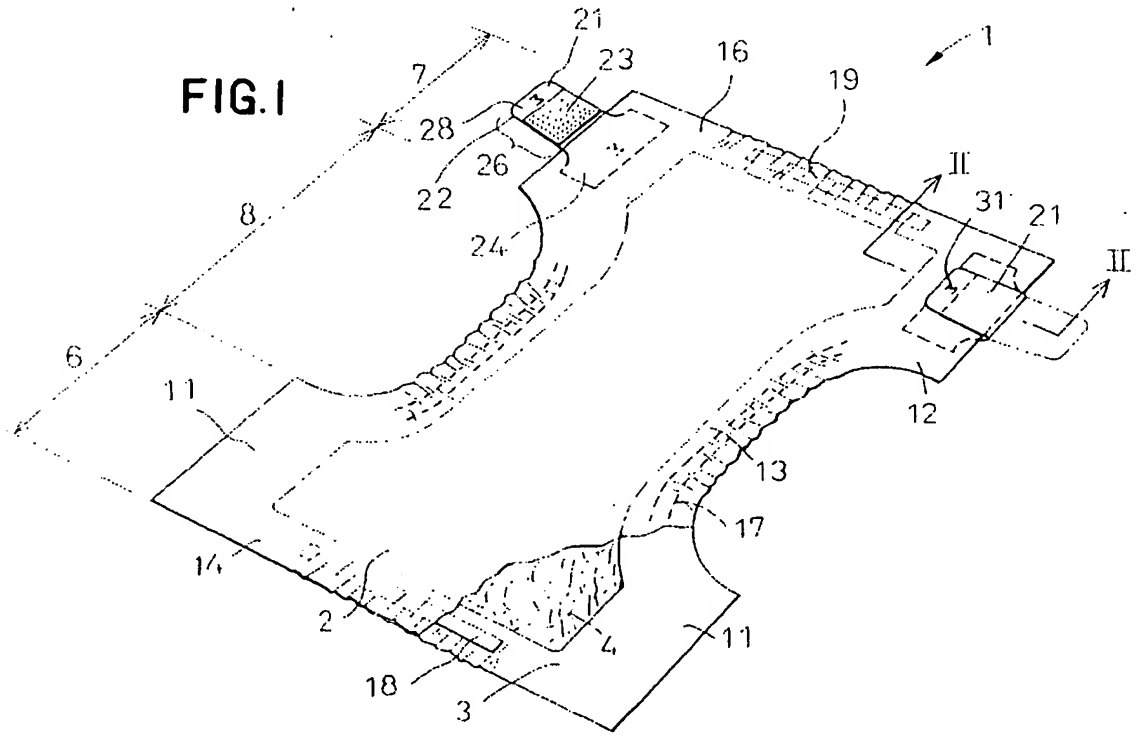
(54) Disposable diaper

(57) A disposable diaper provided with a pair of tape fasteners each having a proximal end section secured to a side portion of a rear waist region of the diaper and a distal end section folded back onto an inner surface of the diaper, a part of the distal end section is releasably welded to the inner surface of the diaper and thereby to facilitate handling of the diaper when it is put on the wearer.

FIG.1



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and waist-opening elastic members 18, 19. These elastic members 17, 18, 19 are secured in their longitudunally extended conditions between the topsheet 2 and the backsheet 3. The rear waist region 7 is provided on its transversely opposite side edges 12 with laterally extendible tape fasteners 21, respectively. These tape fasteners 21 are shown as one of them is folded back onto an inner side of the diaper 1 and the other is unfolded outward.

In the diaper 1, the topsheet 2 is formed by a nonwoven fabric or a perforated film of thermally meltable synthetic resin such as polypropylene and the backsheet 3 is formed by a film of thermally meltable synthetic resin such as polyethylene and polypropylene. The tape fastener 21 comprises a base tape 22 made of a nonwoven fabric and/or a film obtained from thermally meltable synthetic resin such as polypropylene and an fastening zone 23 formed on an inner surface of the base tape 22. A proximal end section 24 of the tape fastener 21 is secured to the side edge 12 of the diaper 1 and a distal end section 26 of the tape fastener is extendible from the side edge 12. The fastening section 23 is formed on the inner surface of the distal end section 26 and a tab 28 of the tape fastener 21 is defined by an outer extension of the fastening zone 23.

Fig. 2 is a sectional view taken along line II-II in Fig. 1. The tape fastener 21 has the proximal end section 24 bonded to respective inner surfaces of the topsheet 2 and the backsheet 3 by means of hot melt adhesive (not shown) and the distal end section 26 folded back onto the outer surface of the topsheet 2. The tab 28 forming a part of the base tape 22 has one to three extremely narrow zones 31 at which the tab 28 is releasably welded to the topsheet 2. Each of these narrow zones 31 provided for such welding has an area of 0.3 - 2.0 mm^2. In the illustrated embodiment, the welded zone 31 describes a small M on the tab 28. The fastening zone 23 is formed by bonding a hook member of the mechanical fastener well known, for example, under the trademark VELCRO comprising hook/loop fastening members to the inner surface of the distal end section 26 by suitable means (not shown) such as the well known welding technique.

According to the arrangement as has been described above, the tape fastener 21 may be pulled upward with the tab 28 held between the user's fingers from the inner surface of the diaper 1 (i.e., the outer surface of the topsheet 2) and thereby to separate the distal end section 26 of the tape fastener 21 from the inner surface of the diaper 1 at the welded zone 31. In this way, the tape fastener 21 becomes ready to be used as indicated by imaginary lines. Such separation of the tape fastener 21 from the inner surface of the diaper 1 is achieved by peel-off of the welded zone 31 from the topsheet 2 or tear-off of the topsheet 2 at the welded zone 31.

Fig. 3 is a view similar to Fig. 2 but showing an alternative embodiment of the invention. According to this embodiment of the diaper 1, the topsheet 2 has a width narrower than a width of the backsheet 3 and a portion of the backsheet 3 extending outward beyond a side edge of the topsheet 2 is-covered with a second topsheet 32. These two sheets 3, 32 are bonded to each other by means of hot melt adhesive (not shown). The tape fastener 21 has the proximal end section 24 bonded to the respective inner surfaces of the second topsheet 32 and the backsheet 3, on one hand, and the tab 28, the second topsheet 32 and the proximal end section 24 welded together in the welded zone 31. According to this alternative embodiment also, the tape fastener 21 may be pulled upward with the tab 28 held between the user's fingers and easily separated from the inner surface of the diaper 1 (i.e., the outer surface of the second topsheet 32). With the diaper 1 having such tape fastener constructed in accordance with this alternative embodiment, a damage possibly occurring on the inner side of the diaper for separation of the tape fastener 21 can be alleviated by use of the second topsheet 32 having a tear strength higher than that of the topsheet 2. Additionally, a compatibility of the topsheet with the tape fastener 21 regarding the thermal meltabilities of these two components can be easily improved by use of the second topsheet 32 having a thermal meltability different from that of the topsheet 2. For example, the second topsheet 32 made of material having a melting point higher than that of the base tape 22 of the tape fastener 21 may be used to alleviate a deterioration possibly occurring in a surface smoothness of the second topsheet 32 in the welded zone 31.

With the diaper 1 according to the invention, it is necessary and sufficient for both the tape fastener 21 and the topsheet 2 (or the second topsheet 32) of the diaper 1 that these two components are thermally meltable in their zones corresponding to the welded zone 31 and in the proximity of these zones. Such requirement is met also by covering the inner surface of the diaper 1 over an area occupied by the proximal end section 24 of the tape fastener 21 and a zone extending in the proximity of this area with a sheet having a desired thermal meltability. Alternatively, the proximal end section 24 may be exposed in the inner surface of the diaper 1 and the distal end section 26 may be directly welded thereto. It is also possible within the scope of the invention to melt one of the inner surface of the diaper 1 and the distal end section 26 and then to bond this to the other not molten. To weld the distal end section 26 to the inner surface of the diaper 1, a suitable technique such as the well known thermal embossing or ultrasonic welding may be used.

The entire desclosure of Japanese Patent Application No. 8-183808 filed on July 12, 1996 including specification, claims, drawings and abstract are incorporated herein by referenced in its entirety.

Having described our invention as related to the embodiments shown in the accompanying drawings, it is our intention that the invention be not limited by any

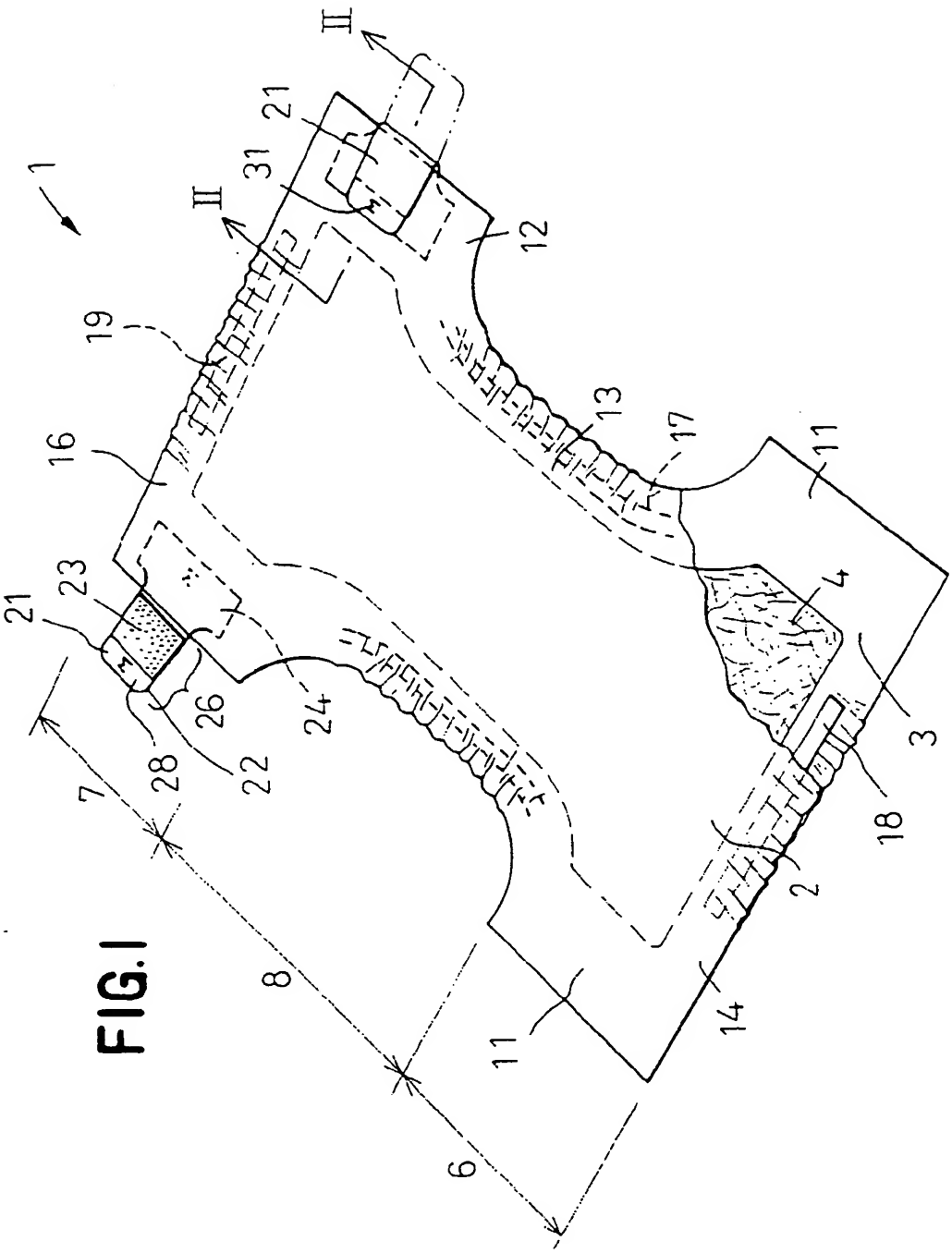

FIG.1

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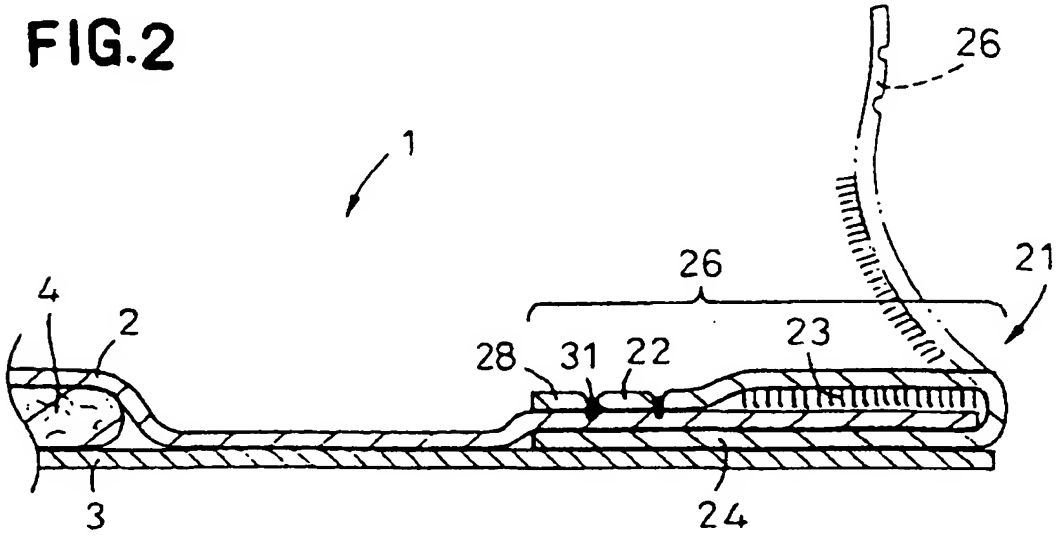
FIG.2



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